IN THE ABSTRACT:

A magnetic loss material exhibiting outstanding high-frequency magnetic loss characteristics extremely effective in eliminating high-frequency transmission noise from very densely integrated electronic microcircuits such as semiconductor integrated circumference devices, and its manufacturing method and a high-frequency current suppression body using same, preferably in a sheet shape comprising an adhesive on a surface. This magnetic thin film consists essentially of M-X-Y, where M is Fe, Co, and/or Ni, X is an element other than M or Y, and Y is F, N, and/or O. The maximum value μ''_{max} of the loss factor μ'' of this material exists at 100 MHz to 10 GHz. A relative bandwidth bwr is not greater than 200% where the relative bandwidth bwr is obtained between two frequencies at which the value of μ'' is 50% of μ''_{max} and normalizing the frequency bandwidth at the center frequency.

REMARKS

Entry of the foregoing amendments, and reexamination and reconsideration of the subject application, pursuant to and consistent with 37 C.F.R. § 1.104 and § 1.112, and in light of the following remarks, are respectfully requested.

Amendments

Claims 1, 2, 5, 15, and 16 have been amended. Claim 1 was amended to more particularly recite the composition of the thin film magnetic material. Claim 10 has been cancelled. No new matter is added.

Restriction Requirement

Contrary to the statement in ¶ 3 of Office action, this requirement was traversed in the paper filed 21 October 2002.

Nevertheless, the election of the Group I claims (claims 1-18) is affirmed in this response.

Specification/Abstract

Amendments to short the abstract are submitted in this paper.

Rejections under 35 U.S.C. 112, second paragraph

The rejection of claims 1-3 hereunder (¶ 7 of the Office action) is believed overcome by the present amendments. Claim 1 now recites the substrate as optional to provide antecedent for claim 3. Note that "optional" components do not render the claims indefninite. *Ex parte Holt*, 19 USPQ2d 1211 (B.P.A.I 1991).

The rejection of claim 5 hereunder is not understood and clarification is requested. It would be apparent to one of ordinary skill in this art what is meant by imaginary and real parts of physical parameters relating to electronics and magnetics. The PTO is to take the claim language as one of ordinary skill in the art would interpret the language in light of the specification. *In re Morris*, 44 USPQ2d 1023 (Fed. Cir. 1997). Magnetic loss (as related to complex permeability) has a real part and an imaginary part. "Magnetic permeability" can be representative of the permeability of a material subjected to a DC magnetic field, or it can be that measured in an AC magnetic field. The AC magnetic permeability μac has a real component μ' and an imaginary component iμ". It is a property of a given material and so can be determined. Determination of the maximum value as a function of frequency enables determination of the relative bandwidth bwr as recited in the claim. If the rejection is maintained, clarification is requested as to why the phrases would not be understood by one of ordinary skill in the art in light of the specification.

The rejection of claim 15 hereunder is traversed. A process limitation may be present in a product claim to further define the product. *In re Luck*, 177 USPQ 523, 525 (CCPA 1973). *See also*, *Brooks v. Street*, 16 USPQ2d 1374, 1376 (B.P.A.I. 1990). Accordingly, the limitations on sputtering and vapor deposition must be given weight and considered. Further, there are microstructural differences in a material deposited by sputtering versus one deposited by vapor deposition. Accordingly, those process limitations do add physical, structural limitations to the claims.

In light of the foregoing, withdrawal of these rejections is believed to be warranted.

Rejections under 35 U.S.C. 102

Claims 1-3 stand rejected hereunder as anticipated by Kamei (EP 0 877 394 A1), which rejection is respectfully traversed. Element 11 in Fig. 4 of Kamei is not a "thin film", which is a term of art relating to layers that are essentially of monomolecular thickness. The film of Kamei is particles "dispersed into a layere of the organic binding agent" (page 3, line 10). Therefore, Kamei does not describe a thin film as recited in claim 1. In addition, the composition in Kamei an Fe-Al-Si alloy or Fe-Ni alloy (page 3, line 11), and therefor is not the claimed M-X-Y composition. Accordingly, this rejection should be withdrawn.

Claims 1-4 stand rejected hereunder as anticipated by Nakagoshi (WO00/19792), which rejection is respectfully traversed. The compositions disclosed by Nakagoshi in ¶ [0016] are unlike the M-X-Y composition recited for this invention in claim 1. Further, there does not appear to be any disclosure of a high-frequency current suppression body, as recited in claim 1. Accordingly, this rejection should be withdrawn.

Rejections under 35 U.S.C. 103

Claims 5-10, 12-13, and 15-18 stand rejected as obvious over the combinationof Nakagoshi in view of Han (*et al.*) (*IEEE Trans. on Mag.*, vol. 32, No. 5, Sept. 1996), which rejection is respectfully traversed.

Applicants first note that claims 5 and 16 are each dependent on claim 1, which has been amended, as noted above, and so all of the rejected claims require the claimed M-X-Y granular magnetic composition. In addition, rejected claims 7 and 17 define the saturation magnetization of the M-X-Y composition as a fraction of the saturation magnetization of an M (alone) composition.

As described thoughout the specification, one aim of this invention is to provide a material having a maximum magnetic loss (μ''_{max}) in a high frequency range (namely 0.1 to 10GHz). To this end, the inventors carried out various studies and found out that the concentration of M in the M-X-Y granular magnetic substance is important so as to realize a magnetic substance having the high magnetic loss in the high frequency range regardless of whether M is Fe, Co, or Ni is chosen as M. The feature of the saturation magnetization of M-X-Y being

only a fraction of the saturation magnetization of M alone is a property of the composition for achieving the desired maximum loss in a high frequency range.

Rejection over Nakagoshi and Han

As noted above, Nakagoshi fails to disclose the claimed M-X-Y composition or loss maximization at high frequencies. Han discloses M-X-Y granular substances, but provides no teaching as to the magnetic loss characteristics in the high frequency range. Rather, Han discloses resistivity and magnetic permeability of the materials discussed therein. This is because Han provides materials adapted for magnetic cores for inductance or transformers, where reduced magnetic loss is required. Accordingly, Han is silent about environments where high magnetic loss is desired. To the extent that Nakagoshi does not disclose thin films there is no motivation to combine it with Han. Motivation to combine references cannot be based on "alter[ing film properties] depending on the desired end product" because such a test is completely contrary to law by assuming the desired end product and its properties. Clearly, unless the cited art provides a teaching of the desired end product or its properties, and how to achieve those results, the rejection is based on hindsight reconstruction. The supposition that "routine experimentation" would achieve the claimed invention is wholly without merit because there still must be some guiding concept found in the art, *In re Fay*, 146 USPQ 46 (CCPA 1965). Further, alleging that it would have been obvious through "routine experimentation" to have modified a high current suppression body with a thin film, when Han provides no description of magnetic loss, clearly uses the impermissible "obvious to try" standard, *In re Mercier*, 185 USPQ 774 (CCPA 1975), *Ex parte Old*, 229 USPQ 196 (BPAI 1985), *In re Geiger*, 2 USPQ2d 1276 (Fed. Cir. 1987).

The statement that the materials of Han inherently have the properties of the claimed M-X-Y material is vigorously traversed because there is no basis for the allegation. The magnetic properties of a material are related to more than its compositional chemistry, and one of ordinary skill in these arts would appreciate that crystal struture and the size of the domains are also important. The fact that composition alone is insufficient is clearly seen in Han's desire to use those

materials in an environment where magnetic loss is to be minimized (magnetic cores), whereas compositionally similar, but patentably different, materials are used in the present invention because they have a high loss at high frequencies.

Han fails to appreciate the specification of the M-X-Y composition, the ratio of the saturation magnetization of the M-X-Y substance to that of M alone, and the high loss at high frequencies. Thus, the examiner appears not to appreciate that specifying the saturation magnetization of M-X-Y with respect to M sets the amount of M in the composition; note that claim 1 requires the presence of M "dispersed in the matrix of said X-Y compound." That amount of M in the X-Y matrix results in the loss at high frequencies that enables the claimed device to function as a high frequency current suppression body.

Finally, the allegation that it would have been obvious to modify Nakagoshi with the thin film compound of Han to provide a "ferrite core with high efficiency and saturation magnetization" clearly misses the point made above that cores have low loss and that the instant invention requires a high loss. Accordingly, the rejection based on the combination of Nakagoshi and Han should be withdrawn.

Rejection over Nakagoshi and Yoshida

The published Yoshida application is prior art as of it U.S. filing date of 4 April 2001 (35 U.S.C. 102(e); MPEP 706.02). The present application is based on a Japanese application claiming priority from April 2000. Accordingly, Yoshida is not available as prior art and this rejection should be withdrawn.

Rejection over Nakagoshi and Ikeda

Ikeda is not available as prior art. Under 35 U.S.C. 102(e)(1), an international (PCT) application has effect under that section of the statute only if published in English. As shown on the attached first page of the PCT publication, the Ikeda priority PCT publication was published in Japanese.

Ikeda disclose a magnetic thin film used for a magnetic recording head of a hard disk device (e.g., page 2, paragraph [0025]) where reduced magnetic loss is required. That is why there is no disclosure of the terms "magnetic loss" nor of "high frequency" or "high frequencies."

Again, that the composition is generally an M-X-Y composition does not mean that it has the same saturation magetization and μ" as the present invention. The saturation magnetization of the instant M-X-Y composition being a fraction of that of M alone, especially when in the range recited in various dependent claims (*e.g.*, claims 7 and 17) is the concentration of M specified, and that concentration dispersed in the X-Y matrix provides a bulk material having a peak magnetic loss μ" in the desired high frequency range. Accordingly, this rejection should also be withdrawn.

Conclusion

In light of the foregoing amendments and remarks, withdrawal of the rejections, and further and favorable action, in the form of a Notice of Allowance, are believed to be next in order, and such actions are earnestly solicited.

Petition for Extension of Time

Pursuant to the provisions of 37 CFR 1.136(a), Applicants hereby petition for a month extension of time to 28 February 2003 in order to respond to the Office Action mailed 28 October 2002. A check in the amount of $ 110.00 is attached. If this paper should necessitate any fees under 37 C.F.R. § 1.16 or § 1.17 not provided, or if there has been an overpayment, please debit or credit as necessary the Deposit Account No. 502144.

Respectfully submitted,

CERTIFICATE OF MAILING OR TRANSMISSION – 37 CFR 1.8

I hereby certify that I have a reasonable basis that this paper, along with any referred to above, (i) are being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to Commissioner of Patents and Trademarks, Washington, D.C. 20231, or (ii) are being transmitted to the U.S. Patent & Trademark Office in accordance with 37 CFR § 1.6(d).

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18 February 2003

APPENDIX SHOWING MARK-UPS OF AMENDMENTS

IN THE CLAIMS:

1. (Amended.) A high-frequency current suppression body having a sheet shape and comprising a magnetic thin film, an adhesive layer or pressure-sensitive adhesive layer [deposited on at least one surface of a magnetic thin film] and optionally a substrate, the adhesive or pressure-sensitive adhesive being deposited on one surface of the thin film, or the substrate disposed between the adhesive or pressure-sensitive adhesive layer and the thin film, wherein said magnetic thin film consists essentially of a magnetic loss material having an M-X-Y composition, where M is at least one of Fe, Co, and Ni, Y is at least one of F, N, and O, and X is at least one element other than M or Y, said M component in said magnetic loss material existing in a granular form dispersed in the matrix of said X-Y compound.

2. (Amended.) The high-frequency current suppression body according to claim 1, further comprising a film or sheet-form substrate composed of a synthetic resin, wherein said magnetic thin film is provided on one surface of [a film or sheet-form] the substrate [composed of a synthetic resin].

5. (Amended.) The high-frequency current suppression body according to claim 1, wherein [said magnetic thin film substantially consists of a magnetic loss material having an M-X-Y composition, where M is at least one of Fe, Co, and Ni, Y is at least one of F, N, and O, and X is at least one element other than M or Y, and] said magnetic loss material is a narrow-band magnetic loss material such that the maximum value μ''_{max} of loss factor μ'' exists with a frequency range of 100- MHz to 10 GHz, said loss factor μ'' being an imaginary part in complex permeability of said magnetic loss material, and that a relative bandwidth bwr is not greater than 200% where the relative bandwidth bwr is obtained by extracting a frequency bandwidth between two frequencies at which the value of μ'' is 50% of the maximum μ''_{max} and normalizing the frequency bandwidth at the center frequency thereof.

Cancel claim 10.

15. (Amended.) The high-frequency current suppression body according to claim 5, wherein said magnetic loss [material] film is a sputtered or vapor deposited thin-film [magnetic body fabricated by a sputtering or vapor deposition method].

16. (Amended.) The high-frequency current suppression body according to claim 1, wherein [said magnetic thin film substantially consists of a magnetic loss material having an M-X-Y composition, wherein M is at least one of Fe, Co, and Ni, Y is at least one of F, N, and O, and X is at least one element other than M or Y, and] said magnetic loss material is a broadband magnetic loss material such that the maximum value μ''_{max} of loss factor μ'' exists with a frequency range of 100- MHz to 10 GHz, said loss factor μ'' being an imaginary part in complex permeability of said magnetic loss material, and that a relative bandwidth bwr is not smaller than 150% where the relative bandwidth bwr is obtained by extracting a frequency bandwidth between two frequencies at which the value of μ'' is 50% of the maximum μ''_{max} and normalizing the frequency bandwidth at the center frequency thereof.

IN THE ABSTRACT:

[In order to provide a] A magnetic loss material exhibiting outstanding high-frequency magnetic loss characteristics extremely effective in eliminating high-frequency transmission noise from very densely integrated electronic microcircuits such as semiconductor integrated circumference devices, [together with a] and its manufacturing method [therefor] and a high-frequency current suppression body [wherein such is used] using same, [the present invention is a high-frequency current suppression body having a] preferably in a sheet shape comprising an adhesive [layer or a pressure-sensitive adhesive layer (23)] on [at least one] a surface [of a magnetic thin film (19)]. This magnetic thin film [is a magnetic loss material consisting] consists essentially of M-X-Y, where M is [at least one of] Fe, Co, and/or Ni, X is [at least one] an element other than M or Y, and Y is [at least one of] F, N, and/or O. The maximum value μ''_{max} of the loss factor μ'' of [the magnetic loss] this material exists [in a frequency range of] at 100 MHz to 10 GHz. A relative bandwidth bwr is not greater than 200% where the relative bandwidth bwr is obtained [by extracting a frequency bandwidth] between two frequencies at which the value of μ'' is 50% of [the maximum] μ''_{max} and normalizing the frequency bandwidth at the center frequency [thereof].